To: T10 Technical Committee
From: Gary Lestage, Kyle Walczak and Kevin Marks - Dell, Inc.
Date: August 30, 2006
Subject: T10/06-182r2 - SMC-3: statistics log page for SMC

## Revision History

Revision 0 (5/07/06) – Initial proposal
Revision 1 (7/5/2006) – changes based on June 5 SMC-3 Conference Call
- Fixed several editorial errors
- Modified wording in the Per Element Media Changer Device Statistics log parameter, so that if the element being described by the PARAMETER CODE field is a medium transport element, then the TOTAL NUMBER OF SCANS field and TOTAL NUMBER OF SCAN RETRIES field are set to zero.
- Modified wording in the Per Element Media Changer Device Statistics log parameter, so that if the element being described by the PARAMETER CODE field is a medium transport element, then the TOTAL PICK/PLACE/RETRIES fields indicate those operations by the medium transport element.
- Add that if the Volume Identifier is unknown it should be set to all ASCII spaces.
- Updated SOURCE ADDRESS field in the Media Changer Diagnostic Data log page parameter.

Revision 2 (8/30/06)
- Removed Per Element and Diagnostic page from proposal and move to separate proposals.
- Reworded Scan counter statistics
- Changed soft to recovered and hard to unrecovered in statistics counters
- Made parameters reset-able with LOG SELECT

## Related Documents

SCSI Media Changer Commands - 3 (T10/1730-D - SMC-3r02)

New text to be added to SSC-3
~~Text to be deleted from SSC-3~~
*Editorial text*

## Overview

As part of the ISV feedback resolution and that Dell sees a need to standardize log pages that will allow for the collection of information required during field analysis and troubleshooting of media changer devices.  This proposal is beneficial to those applications that report diagnostic information back via diagnostic software.  Special code will no longer need to be written specific to the media changer device being used. This proposal defines a Media Changer Statistics log page that contains a collection of counters that can be used to aid field analysis and troubleshooting.

## Suggested Changes to SMC-3:

*<< Add new row to Table 30 - Log page codes >>*

### Table 30 — Log page codes

| Page Code | Description | Reference |
|-----------|-------------|-----------|
| …. | …. | …. |
| XXh | Media Changer Statistics log page | 7.2.x |

| .... | .... | .... |
|---|---|---|

*<< Where XXh are the assigned log pages. >>*

## 7.2.x Media Changer Statistics log page

The Media Changer Statistics log page (see table x) defines data counters associated with the utilization of the media changer device. Individual element counters associated with specific elements are defined in the Element Statistics log page (see x.x.x) A device server that implements the Media Changer Statistics log page shall implement one or more of the defined parameters. Support for individual parameters in the Media Changer Statistics log page is optional. All supported parameters shall be persistent across I_T nexus loss, logical unit reset and power-on. The parameters may be reset with the use of a LOG SELECT command.

### Table x – Media Changer Statistics log page

| Byte\Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| 0 | DS | SPF (0b) | PAGE CODE (XXh) | | | | | |
| 1 | SUBPAGE CODE (00h) | | | | | | | |
| 2 | (MSB) | PAGE LENGTH (n-3) | | | | | | |
| 3 | | | | | | | | (LSB) |
| | Overall Media changer device statistics log parameters | | | | | | | |
| 4 | First overall media changer device statistics log parameter | | | | | | | |
| | : | | | | | | | |
| | : | | | | | | | |
| n | Last overall media changer device statistics log parameter | | | | | | | |

See SPC-4 for a description of the DS bit, SPF bit, PAGE CODE field, SUBPAGE CODE field and PAGE LENGTH field.

The overall media changer device statistics log parameter format is shown in table x+1.

### Table x+1 – Overall media changer device statistics log parameter format

| Byte\Bit | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| 0 | (MSB) | PARAMETER CODE | | | | | | |
| 1 | | | | | | | | (LSB) |
| 2 | DU | Obsolete | TSD (0b) | ETC | TMC | | FORMAT AND LINKING (00b) | |
| 3 | PARAMETER LENGTH (n-3) | | | | | | | |
| 4 | (MSB) | MEDIA CHANGER DEVICE STATISTICS DATA COUNTER | | | | | | |
| N | | | | | | | | (LSB) |

The PARAMETER CODE field is defined in table x+2.

**Table x+2 – Overall media changer device statistics log parameter codes**

| Parameter Code | Description |
|---|---|
| 0000h | Total Number Of Moves |
| 0001h | Total Number of Picks |
| 0002h | Total Number of Pick Retries |
| 0003h | Total Number of Places |
| 0004h | Total Number of Place Retries |
| 0005h | Total Number of Volume Tags read by the Volume Tag Reader |
| 0006h | Total Number of invalid Volume Tags returned by the Volume Tag Reader |
| 0007h | Medium Transport Unrecovered Errors |
| 0008h | Medium Transport Recovered Errors |
| 0009h | Medium Transport X Axis Translation Unrecovered Error |
| 000Ah | Medium Transport X Axis Translation Recovered Error |
| 000Bh | Medium Transport Y Axis Translation Unrecovered Error |
| 000Ch | Medium Transport Y Axis Translation Recovered Error |
| 000Dh | Medium Transport Z Axis Translation Unrecovered Error |
| 000Eh | Medium Transport Z Axis Translation Recovered Error |
| 000Fh | Medium Transport Rotational Translation Unrecovered Error |
| 0010h | Medium Transport Rotational Translation Recovered Error |
| 0011h | Medium Transport Inversion Translation Unrecovered Error |
| 0012h | Medium Transport Inversion Translation Recovered Error |
| 0013h | Import/Export Unrecovered Error |
| 0014h | Import/Export Recovered Error |
| 0015h-7FFFh | Reserved |
| 8000h – FFFFh | Vendor specific |

See SPC-4 for descriptions of the DU bit, TSD bit, ETC bit, TMC field and FORMAT AND LINKING field. The TSD bit and FORMAT AND LINKING field shall be set to the values shown in table x+1.

The PARAMETER LENGTH field indicates the number of bytes in the MEDIA CHANGER DEVICE STATISTICS DATA COUNTER field that follows.

The DEVICE STATISTICS DATA COUNTER field contains the value of the requested data counter.